4.15 CONSTRUCTION-RELATED IMPACTS

Construction-related impacts are short-term impacts that would occur only during the construction of the proposed project and would not occur once construction is complete. The following is a summary of the construction impacts, most of which are discussed in detail in the individual topic sections, Sections 4.1 through 4.15.

4.15.1 Impacts

A. NO BUILD ALTERNATIVE

Since the No Build Alternative would not include any major capital improvements to SR-22, other than adjacent projects that were analyzed in other environmental documents, no additional substantial construction-related impacts would occur.

B. TSM/EXPANDED BUS SERVICE ALTERNATIVE

Only minor construction is proposed under the TSM/Expanded Bus Service Alternative. Construction would include minor work for such TSM measures as signal synchronization/controller upgrades, automated response plan, highway advisory radio, changeable message signs, fleet management system, and transit intersection priority system. Thus, construction impacts would be negligible.

The construction (indirect) energy associated with construction of the TSM/Expanded Bus Service Alternative would be associated with signal synchronization/controller upgrades, automated response plan, highway advisory radio, changeable message signs, fleet management system, and transit intersection priority system. This would result in energy consumption of approximately 5,037 billion BTUs or about 868,570 barrels of oil. (Section 4.14.2)

C. FULL BUILD ALTERNATIVE

Geology and Soils. The Full Build Alternative would require the disturbance of soil and sediments in upland areas and in riverbeds during construction. Consequently, the potential exists for disturbed soil to erode and for sediments to be transported by water. (Section 4.1.5)

During construction, sites, structures, materials, and equipment are particularly vulnerable to impacts associated with earthquakes. Slopes that have not been stabilized can fail, incomplete structures can fall, materials stockpiles can collapse, and equipment can topple over, endangering construction workers and the public.

Isolated lenses of shallow groundwater may be encountered during construction. This may impact construction and result in polluted runoff.

Biology. Maternity colonies of big brown bats and Mexican free-tailed bats are reported to occur at the SR-55 bridges crossing over Santiago Creek. If project construction occurs between March 1 and August 31, it would result in disturbances and possible destruction of the bridge nooks used by the bats. This would be a substantial impact, because maternity colonies of bats are rare. In addition, the bridge provides nesting habitat for migratory birds, such as cliff swallows, rough-winged swallows, and white-throated swifts. (Section 4.3.2)

California Fish and Game Code Sections 4150-4154 protects nongame mammals, including the bats. If construction occurred between March 1 and August 31, as discussed above, violations of this law could occur. (Section 4.3.4)

California Code of Regulations, Title 14, Natural Resources forbids the harassment of any game or nongame bird or animal. If construction disturbed nesting birds or bats, violations of this law could occur. (Section 4.3.4)

Wetlands and Waters of the United States. The study area for the Full Build Alternative supports a total of 0.629 hectare (1.55 acres) of wetlands. None of these wetlands are within the proposed Full Build Alternative right-of-way, but the wetlands could be affected by runoff or erosion from the project area during construction activities. These wetlands are located along Los Alamitos Channel and adjacent to the SR-22 crossing over Santiago Creek. (Section 4.4.2)

The Full Build Alternative would cross several waters of the United States. Although none of these support habitat and permanent impacts would be below the thresholds set for appropriate nationwide permits under Section 404 of the Clean Water Act, temporary impacts for construction would affect these waters. This impact would be minimal. Temporary impacts are listed in Table 4.4-1 in Section 4.4.

Land Use. During construction, temporary construction easements on adjacent properties may be necessary. If these easements result in impacts that would make the affected property unusable for its existing use, substantial impacts would occur.

Employment. The Full Build Alternative would create short-term construction jobs. An approximate maximum of 21,528 short-term employees would be required. Not all of these employees would be working at the same time. (Section 4.6.4)

Traffic Disruption. Widening of the freeways that are part of the Full Build Alternative and interchange improvements would result in traffic disruptions and detours. Temporary lane, interchange, and street closures would be required. There is potential of localized congestion and traffic delays. Parallel roadways can be expected to experience increased traffic during construction.

Schools located near the proposed construction could experience detours to pedestrian and vehicular traffic. In addition, emergency vehicles could also experience detours.

Air Quality. During construction, the Full Build Alternative would be required to comply with regional rules, which would prevent substantial short-term air pollutant emissions. Compliance with the regional rules is assumed for the project and, thus, substantial short-term impacts would not occur.

SCAQMD's Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emissions source. In addition, SCAQMD's Rule 402 requires implementation of dust suppression techniques to prevent fugitive dust creating a nuisance off-site.

Construction would also be required to comply with SCAQMD's Rule 1403, Asbestos Emissions from Demolition/Removal Activities, during the demolition or renovation of asbestos-containing buildings and structures. (Section 4.8.4)

Noise and Vibration. Construction noise represents a short-term impact on the noise environment. The duration and level of construction noise is variable, depending upon the following phases of activity:

- Ground-clearing, demolition, and removal of existing structures, trees, rocks, and soil
- Excavation
- Placement of foundations and roadbeds
- Erection of structures, including bridges and retaining walls
- Finishing, including filling, grading, paving, landscaping, and cleanup operations

Typically, the first two phases, ground-clearing and excavation, generate the highest noise levels. Noise generated by construction equipment, including trucks, graders, bulldozers, concrete mixers, and portable generators, can reach levels in the range of 67 to 98 dBA at 15 meters (50 feet). The EPA's Noise Control Program (40 CFR 204) regulates some construction equipment noise emissions. Presently, air compressors are the only equipment under regulation.
Construction noise is only considered to be substantial in exceptional cases, such as pile driving and crack and seat pavement rehabilitation operations. Otherwise, Caltrans' Standard Specifications (Section 7 and 42) and Standard Special Provisions provide limits on construction noise levels, with normal construction noise levels not exceeding 86 dBA at a distance of 15 meters (50 feet). The Full Build Alternative may require pile driving and/or crack and seat pavement rehabilitation, and substantial short-term impacts would occur. (Section 4.9.3)

The movement of heavy equipment during grading operations and the use of other equipment such as pile drivers would be expected to create vibrations that would be felt by nearby residents. Such vibrations could affect nearby receptors, but are not expected to be of sufficient magnitude to cause structural damage to buildings located along the Full Build Alternative.

Utilities. Improvements proposed by the Full Build Alternative would result in temporary utility relocations where utilities conflict with construction activities. Any service lines located in streets crossing over SR-22, where overcrossing are to be replaced or widened, could be in conflict with construction operations. Any aerial utility lines, signals, or street lighting (including pole crossarms), which are within, adjacent to, or hang over right-of-way areas could be in conflict with construction operations. Relocations could result in short-term service interruptions, although with standard construction practices, such interruptions would be minimal. (Section 4.11.3)

Hazardous Materials and Wastes. Previously identified hazardous materials or wastes sites lie within the path of construction for the Full Build Alternative, potentially exposing construction workers to contaminated soil; underground and above-ground storage tanks, pipes, reservoirs, etc.; debris or above-ground or underground materials from an existing or previous land use; and materials contained within structures scheduled for demolition, including lead paint and asbestos. These previously identified sites include:

- Arco (formerly Thrifty Oil), 13511 Euclid Avenue, Garden Grove
- Arco (formerly Thrifty Oil), 2940 North Bristol Street, Santa Ana
- Orange County Transportation Authority (OCTA) Base 4, 11790 Cardinal Circle, Garden Grove

There are 189 residential and 35 non-residential displacements required for the Full Build Alternative. Some of the structures associated with these displacements may contain asbestos or lead-based paint. During demolition of structures containing these materials, construction workers may be exposed to hazards from these materials.

There is a potential that unidentified hazardous materials and wastes sites within the area to be disturbed may be affected by the Full Build Alternative. Construction workers may be exposed to these previously unidentified hazards.

Soil in unpaved areas next to traffic lanes and shoulders might be contaminated with lead from vehicle emissions (ADL). Construction workers may be exposed to these hazardous soils.

Naturally occurring hazardous materials, such as radon and methane, could be encountered during construction, exposing construction workers to danger.

Hazardous materials may be used during construction of the Full Build Alternative, such as paving materials, chemicals, and paints. These materials may be a potential health threat to people working on the project. Transportation of these materials to the job site may create additional hazards related to traffic and handling accidents. (Section 4.5.3)

Visual Quality. Storage of construction vehicles, equipment, and materials in staging areas would result in a short-term reduction of visual quality. Precise locations of construction staging areas have not yet been defined.

Energy. The construction (indirect) energy associated with construction of the Full Build Alternative would be approximately 5,147 billion BTUs or about 887,460 barrels of oil. (Section 4.14.2)

D. REDUCED BUILD ALTERNATIVE

Geology and Soils. The Reduced Build Alternative would require the disturbance of soil and sediments in upland areas and in riverbeds during construction. Consequently, the potential exists for disturbed soil to erode and for sediments to be transported by water. (Section 4.1.5)

During construction, sites, structures, materials, and equipment are particularly vulnerable to impacts associated with earthquakes. Slopes that have not been stabilized can fail, incomplete structures can fall, materials stockpiles can collapse, and equipment can topple over, endangering construction workers and the public.

Isolated lenses of shallow groundwater may be encountered during construction. This may impact construction and result in polluted runoff.

Wetlands and Waters of the United States. The study area for the Reduced Build Alternative supports a total of 0.615 hectare (1.52 acres) of wetlands. None of these wetlands are within the proposed Full Build Alternative right-of-way, but the wetlands could be affected by runoff or erosion from the project area during construction activities. These wetlands are located along Los Alamitos Channel. (Section 4.4.2)

The Reduced Build Alternative would cross several waters of the United States. Although none of these support habitat and permanent impacts would be below the thresholds set for appropriate nationwide permits under Section 404 of the Clean Water Act, temporary impacts for construction would affect these waters. This impact would be minimal. Temporary impacts are listed in Table 4.4-2 in Section 4.4.

Land Use. During construction, temporary construction easements on adjacent properties may be necessary. If these easements result in impacts that would make the affected property unusable for its existing use, substantial impacts would occur.

Employment. The Reduced Build Alternative would create short-term construction jobs. An approximate maximum of 13,548 short-term employees would be required. Not all of these employees would be working at the same time. (Section 4.6.4)

Traffic Disruption. Widening of the freeways that are part of the Reduced Build Alternative and interchange improvements would result in traffic disruptions and detours. Temporary lane, interchange, and street closures would be required. Three is potential of localized congestion and traffic delays. Parallel roadways can be expected to experience increased traffic during construction.

Schools located near the proposed construction could experience detours to pedestrian and vehicular traffic. In addition, emergency vehicles could also experience detours.

Air Quality. During construction, the Reduced Build Alternative would be required to comply with regional rules, which would prevent substantial short-term air pollutant emissions. Compliance with the regional rules is assumed for the project and, thus, substantial short-term impacts would be negligible.

SCAQMD's Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emissions source. In addition, SCAQMD's Rule 402 requires implementation of dust suppression techniques to prevent fugitive dust creating a nuisance off-site.

Construction would also be required to comply with SCAQMD's Rule 1403, Asbestos Emissions from Demolition/Removal Activities, during the demolition or renovation of asbestos-containing buildings and structures. (Section 4.8.4)

Noise and Vibration. Construction noise represents a short-term impact on the noise environment. The duration and level of construction noise is variable, depending upon the following phases of activity:

- Ground-clearing, demolition, and removal of existing structures, trees, rocks, and soil
- Excavation
- Placement of foundations and roadbeds
- Erection of structures, including bridges and retaining walls
- Finishing, including filling, grading, paving, landscaping, and cleanup operations

Typically, the first two phases, ground-clearing and excavation, generate the highest noise levels. Noise generated by construction equipment, including trucks, graders, bulldozers, concrete mixers, and portable generators, can reach levels in the range of 67 to 98 dBA at 15 meters (50 feet). The EPA's Noise Control Program (40 CFR 204) regulates some construction equipment noise emissions. Presently, air compressors are the only equipment under regulation.

Construction noise is only considered to be substantial in exceptional cases, such as pile driving and crack and seat pavement rehabilitation operations. Otherwise, Caltrans' Standard Specifications (Section 7 and 42) and Standard Special Provisions provide limits on construction noise levels, with normal construction noise levels not exceeding 86 dBA at a distance of 15 meters (50 feet). The Full Build Alternative may require pile driving and/or crack and seat pavement rehabilitation, and substantial short-term impacts would occur. (Section 4.9.3)

The movement of heavy equipment during grading operations and the use of other equipment such as pile drivers would be expected to create vibrations that would be felt by nearby residents. Such vibrations could affect nearby receptors, but are not expected to be of sufficient magnitude to cause structural damage to buildings located along the Full Build Alternative.

Utilities. Improvements proposed by the Reduced Build Alternative would result in temporary utility relocations where utilities conflict with construction activities. Any service lines located in streets crossing over SR-22, where overcrossings are to be replaced or widened, could be in conflict with construction operations. Any aerial utility lines, signals, or street lighting (including pole cross-arms), which are within, adjacent to, or hang over right-of-way areas could be in conflict with construction operations. Relocations could result in short-term service interruptions, although with standard construction practices, such interruptions would be minimal. (Section 4.11.3)

Hazardous Materials and Wastes. One previously identified hazardous materials or wastes site lies within the path of construction for the Reduced Build Alternative, potentially exposing construction workers to contaminated soil; underground and above-ground storage tanks, pipes, reservoirs, etc.; debris or above-ground or underground materials from an existing or previous land use; and materials contained within structures scheduled for demolition, including lead paint and asbestos. This previously identified site is:

- Arco (formerly Thrifty Oil), 13511 Euclid Avenue, Garden Grove

There are 10 residential and 24 non-residential displacements required for the Reduced Build Alternative. Some of the structures associated with these displacements may contain asbestos or lead-based paint. During demolition of structures containing these materials, construction workers may be exposed to hazards from these materials.

There is a potential that unidentified hazardous materials and wastes sites within the area to be disturbed may be affected by the Reduced Build Alternative. Construction workers may be exposed to these previously unidentified hazards.

Soil in unpaved areas next to traffic lanes and shoulders might be contaminated with lead from vehicle emissions (ADL). Construction workers may be exposed to these hazardous soils.

Naturally occurring hazardous materials, such as radon and methane, could be encountered during construction, exposing construction workers to danger.

Hazardous materials may be used during construction of the Reduced Build Alternative, such as paving materials, chemicals, and paints. These materials may be a potential health threat to people working on the project. Transportation of these materials to the job site may create additional hazards related to traffic and handling accidents. (Section 4.5.4)

Visual Quality. Storage of construction vehicles, equipment, and materials in staging areas would result in a short-term reduction of visual quality. Precise locations of construction staging areas have not yet been defined.

Energy. The construction (indirect) energy associated with construction of the Reduced Build Alternative would be approximately 5,288 billion BTUs or about 911,700 barrels of oil. (Section 4.14.2)

Thresholds of Significance for CEQA:

- Impacts on construction from shallow groundwater lenses and potential pollution of runoff during dewatering operations
- Impacts from temporary construction easements, preventing use of adgacent land for intended uses or causing long-term impacts
- Visual impacts associated with views of construction staging areas
- Traffic disruption during construction
- Traffic disruption during construction affecting school bus and emergency response routes
- Danger to construction workers and the general public due to potential earthquake damage during construction

A. NO BUILD ALTERNATIVE

The No Build Alternative would not have impacts to the above construction activities.

B. TSM/EXPANDED BUS SERVICE ALTERNATIVE

Only minor construction is proposed under the TSM/Expanded Bus Service Alternative. All impacts related to constructions are anticipated to be less than significant.

C. FULL BUILD ALTERNATIVE

Under the Full Build Alternative, isolated lenses of shallow groundwater may be encountered during construction. During construction, temporary construction easements on adjacent properties may be necessary. Widening of the freeways that are part of the Full Build Alternative and interchange improvements would result in traffic disruptions and detours. Storage of construction vehicles, equipment, and materials in staging areas would result in a short-term reduction of visual quality. After mitigation, the impacts outlined above are anticipated to be less than significant (see CON-FB-1, CON-FB-2, CON-FB-3, CON-FB-4, CON-FB-5, CON-FB-6, CON-FB-7).

D. REDUCED BUILD ALTERNATIVE

Under the Reduced Build Alternative, isolated lenses of shallow groundwater may be encountered during construction. During construction, temporary construction easements on adjacent properties may be necessary. Widening of the freeways that are part of the Reduced Build Alternative and interchange improvements would result in traffic disruptions and detours. Storage of construction vehicles, equipment, and materials in staging areas would result in a short-term reduction of visual quality. After mitigation, the impacts outlined above are anticipated to be less than significant (see CON-RB-1, CON-RB-2, CON-RB-3, CON-RB-4, CON-RB-5, CON-RB-6, CON-RB-7).

4.15.2 Mitigation

Mitigation for most of the impacts discussed in this section is provided by topic in Sections 4.1 through 4.14. In additional, the following mitigation measures are required.

A. NO BUILD ALTERNATIVE

None required.

B. TSM/EXPANDED BUS SERVICE ALTERNATIVE

None required.

C. FULL BUILD ALTERNATIVE

See Sections 4.1 through 4.14. In addition, the following mitigation measures are required.

CON-FB-1. If shallow groundwater lenses are encountered during construction, appropriate dewatering measures will be used to prevent impacts on construction and to ensure that polluted runoff does not leave the site. Disposal of the excess water will comply with the applicable NPDES permit and Caltrans' standards.

CON-FB-2. If temporary construction easements are required and these easements result in an inability for land owners to use their property as intended, additional substantial impacts not foreseen in this document would occur. Supplemental environmental analysis and documentation will be required. Following construction, affected properties will be returned to their pre-construction condition.

CON-FB-3. Where appropriate and feasible, construction staging areas will be located inconspicuously to minimize adverse visual effects upon residential and recreational areas.

CON-FB-4. During final design, Caltrans will work closely with the affected local agencies to coordinate traffic control plans, construction schedules, and necessary detours. Caltrans will establish a Traffic Management Plan (TMP) consistent with the Caltrans standard procedures to minimize localized congestion and travel delays during construction. Development and implementation of this plan shall be coordinated with local agencies and transit districts. The TMP will include provisions for public notification through various forms of media. Construction will begin after right-of-way acquisitions and final designs are complete.

CON-FB-5. Prior to beginning construction, Caltrans will submit a copy of the proposed construction schedule and detour information to all potentially affected school districts and associated transportation departments so that school bus routes and emergency vehicle routes can be revised.

CON-FB-6. Caltrans will require all construction contractors to integrate recycling or material re-use programs into their bid proposals.

CON-FB-7. Construction techniques will be used to ensure the safety of construction workers and the general public in the event of an earthquake. Such techniques will include the use of shoring and falsework to support structures under construction and limiting access to dangerous areas such as the foot of newly constructed slopes, areas around equipment, and materials storage areas.

D. REDUCED BUILD ALTERNATIVE

See Sections 4.1 through 4.14. In addition, the mitigation measures CON-RB-1 through CON-RB-7, which are the same as CON-FB-1 through CON-FB-7, are required.

4.15.3 Residual Impacts After Mitigation

A. NO BUILD ALTERNATIVE

None.

B. TSM/EXPANDED BUS SERVICE ALTERNATIVE

Less than substantial.

C. FULL BUILD ALTERNATIVE

It is unlikely that all construction staging areas can be located inconspicuously in the dense urban areas that border the project. Therefore, substantial short-term impacts would remain after mitigation for the construction period.

D. REDUCED BUILD ALTERNATIVE

It is unlikely that all construction staging areas can be located inconspicuously in the dense urban areas that border the project. Therefore, substantial short-term impacts would remain after mitigation for the construction period.